

REMARKS

Claims 1, 4-13 and 20-65 remain in the application, of which claims 20-30 and 38-61 have been withdrawn from consideration in connection with a Restriction Requirement issued by the Examiner. Reconsideration of the pending claims is requested.

The Examiner has requested that the Applicants explain how the language "one or more of said pyrotechnic devices comprise non-detonating initiators" in claim 64 meets the definiteness requirement of 35 U.S.C. § 112, second paragraph. This language does not mean that the pyrotechnic devices themselves are non-detonating. Rather, it means that the pyrotechnic devices have initiators that are non-detonating. Initiators can be either detonating or non-detonating. A detonating initiator creates a detonation, i.e., an explosion, which in turn detonates the pyrotechnic device. By contrast, a non-detonating initiator uses deflagration, i.e., rapid burning of a pyrotechnic material, as opposed to a detonation. Hence, claims 64 and 65 meet the requirements of 35 U.S.C. § 112, second paragraph.

The Examiner has requested that the Applicants explain how claims 1, 4-12, 31-33, 35-37, 62 and 63 are patentable over USPN 6,166,452 to Adams et al. ("Adams"). Claim 1, and its dependent claims 4-12, 31-33, recite, *inter alia*, "a bus controller connected to said plurality of pyrotechnic devices through said network, said bus controller being operative to selectively address, with a single command, one or more of said pyrotechnic devices using said unique identifiers," a feature which is neither disclosed or suggested in Adams. The claimed addressing scheme provides total

flexibility in addressing any combination of the pyrotechnic devices that are connected on the network. Specifically, a single command can be used to address as few as one or as many as all of the networked devices. By contrast, Adams only discloses an addressing scheme which uses a "unique" command for each device. (See, Adams, col. 5, lines 33-44). The claimed addressing scheme is highly beneficial in applications where it may be necessary to fire as few as one pyrotechnic device or as many as all of the pyrotechnic devices at a given time. For example, using the claimed addressing scheme it is possible to arm all of the pyrotechnic devices simultaneously so that they are in a "fire ready" condition. Subsequently, selected ones of the pyrotechnic devices can be fired by issuing discrete firing commands to individual pyrotechnic devices at the time each device is to be fired. Alternatively, a plurality of the pyrotechnic devices could be subsequently fired by issuing a command that addresses the desired combination of pyrotechnic devices. In some instances it may be desirable to fire all of the pyrotechnic devices at the same time, which can also be accomplished via the claimed addressing scheme. After careful review, Applicants can discern no teaching or suggestion in Adams of a bus controller which is "operative to selectively address, with a single command, one or more of said pyrotechnic devices using said unique identifiers." Hence, claims 1, 4-12, and 31-33 are patentable over Adams.

Claim 4 depends from claim 1 and further recites that the "bus controller transmits and receives multiplexed digital signals over said network." The Office Action apparently equates the electronic control unit (ECU) of Adams to the claimed bus controller. The Office Action cites to column 5, lines 29-32 of Adams in connection with

the multiplexing feature recited in claim 4. This portion of Adams states that "[t]he diagnostic means comprises, for example, a multiplexer an analog-to-digital converter for reading the safety device controller integrity data and sending the controller integrity data to the ECU (emphasis added)." This does not constitute a disclosure of a bus controller that transmits and receives multiplexed digital signals over a network, as recited in claim 4. At most, the ECU of Adams may receive multiplexed signals. Hence, this is an additional patentable distinction between claim 4 and Adams.

Claims 6 and 9 ultimately depend from claim 1 and further recite "a bleed resistor electrically connected to said energy reserve capacitor [of a respective pyrotechnic device]." As discussed on page 18 of the present application, a pyrotechnic device can be "disarmed" by discharging its energy reserve capacitor into the bleed resistor. The Office Action indicates that Adams discloses bleed resistors at column 4, lines 10-18. However, the resistors described at the cited text do not constitute bleed resistors within the meaning of claims 6 and 9. Rather, the cited text discusses using resistors 63, 64 to "provide buffer resistance and suppress electromagnetic interference." The text also discusses using a resistor 60 which "sets up a diagnostic current for a controller 59. . ." None of these resistors constitute bleed resistors within the meaning of claims 6 and 9. The resistors 60, 63 and 64 in Adams also do not appear to be "electrically connected to said energy reserve capacitor" as specified in claims 6 and 9. Hence, the claimed bleed resistor of Claims 6 and 9 is another patentable distinction over Adams.

Claim 31 depends from claim 1 and further recites that "the bus controller is operative for assigning the unique identifiers to each of said logic devices," a feature

that is neither disclosed nor suggested in Adams. Claim 32 depends from claim 31 and further specifies that the bus controller is operative for assigning the unique identifiers each time the networked ordnance system is powered up, another feature that is not disclosed or suggested in Adams. These claimed features are beneficial because they provide flexibility in how the addressing schemes can be structured and implemented in the claimed invention. Hence, claims 31 and 32 include further patentable distinctions over Adams.

Claims 33 and 34 recite, *inter alia*, "a plurality of pyrotechnic devices connected by a network, each device comprising an initiator and a logic device associated with a unique identifier; means for transmitting a digital arming command onto the network, the digital arming command using one or more of the unique identifiers . . . and means for transmitting a digital firing command onto the network, the digital firing command using one or more of the unique identifiers" Hence, as with claim 1, by using the addressing scheme in which commands use one or more unique identifiers, it is possible to arm any combination of the networked pyrotechnic devices using a single arming command. It is also possible to fire any combination or subcombination of the armed pyrotechnic devices via a single firing command that uses the unique identifiers of the respective pyrotechnic devices. As discussed above, Adams only discloses an addressing scheme which uses a "unique" command for each device. (See Adams, col. 5, lines 33-44). Adams does not disclose or suggest using commands that incorporate a plurality of unique identifiers to address multiple devices via a single command. Therefore, claims 33 and 34 are patentable over Adams.

Claims 33 and 34 also recite "means for altering an analog condition of the network to a firing condition . . . storing activation energy in the associated pyrotechnic device if the digital arming command includes the unique identifier of the logic device; and releasing the stored activation energy into the initiator of its associated pyrotechnic device if both (1) the analog condition of the network has been modified to the firing condition and (2) the digital firing command includes the unique identifier of the logic device." Thus, before a given pyrotechnic device can be fired, it is necessary to both modify an analog network condition and issue a firing command that includes the unique identifier for the logic device of that specific pyrotechnic device. This claimed feature enhances safety by reducing the possibility of erroneously firing a pyrotechnic device. Adams does not disclose or suggest this claimed combination. Accordingly, this claimed combination of Claims 33 and 34 is a further patentable distinction over Adams.

Claims 35-37 recite a networked ordnance system wherein the energy reserve capacitors of the pyrotechnic devices in the system "can be charged in approximately 5 milliseconds or less." After careful review, Applicants can discern no teaching or suggestion in Adams of a networked ordnance system wherein the energy reserve capacitors in the pyrotechnic devices "can be charged in approximately 5 milliseconds or less." There certainly is no explicit description of this claim feature in Adams, nor is this claim feature inherent in Adams. Therefore, claims 35-37 are patentable over Adams.

Claims 62 and 63 recite a "bus controller being operative for assigning the unique identifiers to the logic devices." These claims are patentable over Adams for the reasons discussed above in connection with claims 31 and 32.

The Examiner has requested that the Applicants explain how claims 64 and 65 are patentable over USPN 6,341,562 to Brisighella in view of Adams. Claims 64 and 65 recite, *inter alia*, a "bus controller being operative to selectively address, with a single command, one or more of said pyrotechnic devices using said unique identifiers." Claims 64 and 65 are patentable over Adams for the reasons discussed above in connection with Claim 1. Brisighella fails to overcome the deficiencies of Adams. Namely, Brisighella fails to disclose or suggest a bus controller which is "operative to selectively address, with a single command, one or more of said pyrotechnic devices." Therefore, claims 64 and 65 are patentable over Brisighella in view of Adams.

The Examiner has requested that the Applicants explain how claim 13 is patentable over USPN 6,403,887 to Kebabjian in view of Adams. Claim 13 depends from claim 1 and is patentable over Adams for the reasons given above in connection with claim 1. Kebabjian fails to overcome the deficiencies of Adams. Namely, Kebabjian fails to disclose or suggest a bus controller which is "operative to selectively address, with a single command, one or more of said pyrotechnic devices." Thus, claim 13 is patentable over Kebabjian in view of Adams.

In view of the above, claims 1, 4-13, 31-37 and 62-65 are believed to be in condition for allowance. No fees are believed to be due in connection with this submission. Please charge any applicable fees to Deposit Account No. 13-0017.

INFORMATION DISCLOSURE STATEMENT OF OCTOBER 9, 2002

On October 9, 2002, Applicants filed a submission in this application with the USPTO via Express Mail. Included in this submission was an Information Disclosure Statement ("IDS"), a copy of which is attached at Tab A. Applicants' submission (including the IDS) was received in the USPTO mail room on October 9, 2002, as is indicated on the PTO mailroom date stamp on the return receipt postcard that was included with the Applicants' October 9, 2002 submission. A copy of the return receipt postcard is attached at Tab B. To date, Applicants have not received an initialed form PTO-1449 to indicate that the Examiner has considered the references that were cited in the IDS of October 9, 2002. Applicants again request that the Examiner initial the appropriate area of the Form PTO-1449 and return a copy of the initialed Form PTO-1449 to the undersigned, to confirm that the Examiner has considered the references that were included with the IDS of October 9, 2002.

Respectfully submitted,



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Date: May 19, 2003

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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

PATENT APPLICATION OF:)
Nelson et al.)
SERIAL NO.: 09/656,325)
FILED: 9/6/2000)
FOR: NETWORKED ELECTRONIC)
ORDNANCE SYSTEM)
Examiner: T. Chambers)
Group Art Unit: 3641)

EXPRESS MAIL NO. EL 929182366 US

Date: October 9, 2002

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MAY 22 2003

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INFORMATION DISCLOSURE STATEMENT

Attention: Office of Petitions
Assistant Commissioner for Patents
Box DAC
Washington, D.C. 20231

Dear Sirs:

Pursuant to 37 C.F.R. §§ 1.97 and 1.98, the references listed on the enclosed Form PTO-1449 are submitted for consideration by the Examiner in the examination of the above-identified patent application.

The full consideration of the references in their entirety by the Examiner is respectfully requested and encouraged. Also, it is respectfully requested that the references be entered into the record of the present application and that the Examiner place his or her initials in the appropriate area on the enclosed Form PTO-1449, thereby indicating the Examiner's consideration of each of the references.

The submission of the references listed on the Form PTO-1449 is for the purpose of providing a complete record and is not a concession that the references listed thereon are prior art to the invention claimed in the patent application. The right is expressly reserved to establish an invention date earlier than the above-identified filing date in order to remove any reference submitted herewith as prior art should it be deemed appropriate to do so.

Further, the submission of the references is not to be taken as a concession that any reference represents art that is relevant or analogous to the claimed invention. Accordingly, the right to argue that any reference is not properly within the scope of prior art relevant to an examination of the claims in the above-identified application is also expressly reserved.

The Information Disclosure Statement is being filed:

 (a) within three months of the filing date of the patent application, (b) within three months of the date of entry into the national stage as set forth in 37 C.F.R. § 1.491 of the international application, or (c) before the mailing date of a first Office Action on the merits.

X after (a), (b), or (c) above, but before the mailing date of a final action under 37 C.F.R. § 1.113 or a Notice of Allowance under 37 C.F.R. § 1.311, and includes:

 the Certification under 37 C.F.R. § 1.97(e) (see "Certification" below) or

X the fee of \$180.00 set forth in 37 C.F.R. § 1.17(p) (see "Fees" below).

 after the mailing date of a final action under 37 C.F.R. § 1.113 or a Notice of Allowance under 37 C.F.R. § 1.311, and includes the Certification under 37 C.F.R. § 1.97(e) (see "Certification" below), and the Fee set forth in 37 C.F.R. § 1.17(p) (see "Fees" below).

Enclosures

X A copy of each reference listed on the enclosed Form PTO-1449 and not previously provided to or by the PTO.

X

A copy of the foreign search report for Application No. 01120330.4 (EP 1 186 852 A1), which corresponds to the above application is enclosed herewith.

The references listed on the enclosed Form PTO-1449 were previously identified in the parent application(s) of the present application, and copies of the references were furnished at the time. Accordingly, additional copies of the references are not submitted herewith, so as not to burden the file with duplicate copies of references. The Examiner is respectfully requested to carefully review the references in accordance with the requirements set out in the Manual of Patent Examining Procedure. In accordance with 37 C.F.R. § 1.98(d), the details of the parent application(s) relied upon for an earlier filing date under 35 U.S.C. § 120 in which copies of the references were previously furnished are set out below:

U.S. APPLICATIONS		Status (check one)		
U.S. Applications	U.S. Filing Date	Patented	Pending	Allowed

Other Applications

The Examiner's attention is directed to the following U.S. patent application(s):

U.S. APPLICATIONS		Status (check one)		
U.S. Applications	U.S. Filing Date	Patented	Pending	Abandoned

Certification

The undersigned attorney hereby certifies that each item of information contained in the Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign patent application not more than three months prior to the filing of the Information Disclosure Statement.

The undersigned attorney hereby certifies that no item of information contained in the Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign patent application or, to the knowledge of the attorney signing after making reasonable inquiry, was known to any individual designated in 37 C.F.R. § 1.56(c) more than three months prior to the filing of the Information Disclosure Statement.

Fees

 No fee is owed by the applicant(s).

 X The IDS Fee of \$180.00 under 37 C.F.R. § 1.17(p) is enclosed herewith.

Method Of Payment of Fees

 X Attached is a check in the amount of \$180.00.

 Charge Deposition Account No. 13-0017 in the amount of \$ _____
(A duplicate copy of this communication is enclosed for that purpose).

Authorization to Charge Additional Fees

 X If any additional fees are owed in connection with this communication, please charge Deposit Account No. 13-0017. (A duplicate copy of this communication is enclosed for that purpose).

Instructions As To Overpayment

 X Credit Account No. 13-0017.

 Refund

Date: October 9, 2002

Respectfully submitted

Kirk A. Vander Leest
Reg. No. 34,036



ASSISTANT COMMISSIONER FOR PATENTS

Sir: Please place the USPTO receipt stamp hereon and place in outgoing mail to acknowledge receipt of:

Docket No: 14073US01

Applicant: Nelson et al.

Serial No: 09/656,325

Filed: 9-6-00

Transmittal

Fee \$ 1392.00 + 1280.00 = 2672.00

Patent Application including:

- Page(s) Cover Sheet
- Page(s) Specification
- Page(s) Claims
- Page(s) Abstract
- Page(s) Drawings
- Response to Notice of Missing Parts
- Declaration & POA Signed Unsigned
- Amendment 23 Page(s)
- Assignment Page(s) Cover Sheet Page(s)
- IDS with PTO-1449 5 Page(s)
- Cited References
- Other Petition for Reissue
- Stmt. Under 37 CFR 3.73(b)
- Recitation of Prior POA

Certificate of Mailing as dated below

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Dated: 10-9-02

Respectfully: **McANDREWS, HELD & MALLOY, LTD.**

Attorneys for Applicant

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